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Evaluation of the differences in sexual functions of women who underwent transobturatuar tape surgery

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ABSTRACT

Aims: The study aims to determine the changes in sexual function and life of patients with stress urinary incontinence (SUI) and mixed type urinary incontinence (MUI) with transobturator tape (TOT) operation.

Methods: 232 urinary incontinence patients who had only TOT surgery between the dates of May 2022- May 2023 were included in the study. Participants were similar in terms of demographic parameters. Participants completed several questionnaires, such as the Incontinence Impact Questionnaire (IIQ-7), Urogenital Distress Inventory (UDI-6), Female Sexual Function Index (FSFI), and the Pelvic Organ Prolapse/Urinary Incontinence Sexual Questionnaire (PISQ-12), both before surgery and six months post-operative.

Results: While IIQ-7 and UDI-6 values, which measure the adverse effects of urinary incontinence, were 13.06±3.74, 7.03±2.61 preoperatively, they were 2.14±2.12 and 2.92±1.77 postoperatively. The FSFI values for evaluating female sexual function were 22.58±1.91 preoperatively and 26.62±1.80 postoperatively, respectively. The total value of the PISQ-12 questionnaire, which also evaluated sexual function, was 39.77±14.19 preoperatively and 46.61±0.97 postoperatively. There was a significant difference between the results of the surveys conducted before and after the operation.(p values: 0.0001, 0.0001, 0.0001, and 0.0001, respectively).

Conclusion: Having a TOT operation affects the sexual function and life of patients suffering from SUI positively.

Keywords: Female sexual life, stress urinary incontinence, trans obturator tape

INTRODUCTION

Urinary incontinence in women negatively affects their emotional state, social life, and even sexual function and life.[1] Urinary incontinence is classified according to its physiopathology. Stress urinary incontinence (SUI) constitutes more than 50% of women suffering from urinary incontinence.[2] Mixed urinary incontinence (MUI) is the presence of detrusor overactivity and stress urinary incontinence (SUI) at different rates in the same case and has a prevalence of 7.5-25%. Almost two in three women suffer from either isolated stress urinary incontinence or mixed urinary incontinence.[3] When we consider the female sexual function with all its components, we understand that it is affected by multiple and combined situations. In addition to conditions that affect sexual function and sexual life related to gynecology, such as desire, arousal, lubrication, orgasm, satisfaction, and dyspareunia, coital incontinence, which is often ignored, also adversely affects sexual life and function.[4]

The incidence of all women suffering from SUI ranges from 28-70%. However, it is considered higher because women are ashamed to hide this situation.[5,6] The foul odor created by this situation adversely affects the sexual life of women and their partners with coital incontinence and may even end the sexual life ultimately.[7]

Sexual dysfunction due to stress urinary or mixed urinary incontinence can only be eliminated by treating the incontinence. Of the mid-urethral slings, trans obturator tape (TOT) is the procedure with the highest cure rate.[8]

The main subject we aim in this study is to find out the changes in sexual function and life before and after a TOT operation in terms of sexual function.

METHODS

The study was carried out with the permission of İstanbul Kanuni Sultan Süleyman Training and Research Hospital Clinical Researches Ethics Committee (Date: 26.05.2022, Decision No: KAEK/2022.05.117). All procedures were carried out in accordance with the ethical rules and the

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principles of the Declaration of Helsinki. We obtained informed consent from all patients and kept them in our archive.

We carried out this prospective study at a Training and Research Hospital between May 2022 and May 2023. The number of participants included in our study was 232, and the diagnosis of stress urinary incontinence (SUI) or stress-weighted mixed urinary incontinence (MUI) was made by specialist urogynecologists, and TOT operation was indicated. To diagnose SUI or MUI, we performed a cough test on the patients, conducted a bimanual examination, and took a detailed anamnesis. We used urodynamic tests only in cases where we had difficulty making a diagnosis. The demographic parameters of the patients were age, parity, mode of delivery, menopausal status, body mass index (BMI), smoking, coital incontinence, and incontinence types. We administered the incontinence impact questionnaire (IIQ-7), urogenital distress inventory (UDI-6), female sexual function index (FSFI), and pelvic organ prolapse/urinary incontinence sexual questionnaire (PISQ-12) questionnaires to all participants. We re-administered the same questionnaires to all participants in the sixth postoperative month. All the questionnaires we administered to the patients were completed in written form. We started the study with a total of 251 participants. Twelve of them did not want to come to follow-ups for various reasons. Four patients' operations were unsuccessful, and their incontinence continued. Two of the cases underwent gynecological surgery for benign reasons, and one for malignant reasons. (**Figure**).

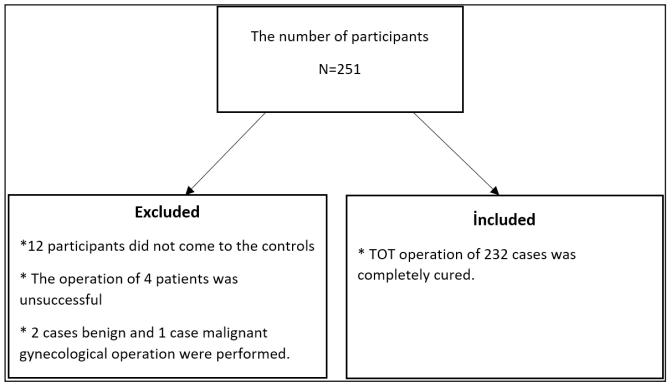
The number of participants
N=251
Excluded
*12 participants did not come to the controls
* The operation of 4 patients was unsuccessful
* 2 cases benign and 1 case malignant gynecological operation were performed.
İncluded
* TOT operation of 232 cases was completely cured.

Figure. Flow diagram.

It was not combined with any additional operation during the TOT operation. Participants were operated with the same surgical team and using the same procedure. Preoperatively, 1 gram of cefezole was administered intravascularly to all patients. All operated patients were operated on under legionnaires anesthesia. The TOT operation was performed "from outside to inside" using a tension-free mesh. All cases were checked postoperatively on the 10th day, 30th day and 6th month. During the sixth month of control, all patients were asked to complete questionnaires about when they were sexually active. All patients were cured of SUI, as relapse, complications, and unsuccessful operations were exclusion criteria.

The incontinence impact questionnaire (IIQ-7) was created in 1995 to determine the impact of urinary incontinence on patients.[9] In this four-point Likert-type survey consisting of seven questions, the effects of urinary incontinence while performing daily activities are questioned. Each question is answered as not at all, a little bit, moderately, or greatly, and scores are given from 0 to 3, from none to many. The survey was validated from its original language into Turkish.[10]

We used the PISQ-12 questionnaire because it allows us to analyze sexual function from various aspects (partner, mental, and physical). The PISQ-12 scale consists of 12 questions, and the answers are rated on a 5-level Likert scale between "never" and "always." Scoring is between 0 and 4. In this scale, the total score is obtained by adding the points given to each question, and the maximum total score is 48. In this evaluation (PISQ-12), a low total score is considered to be an indicator of poor sexual function, and high scores are considered to be an indicator of less impairment of sexual function.[11] This questionnaire was validated from its original language into Turkish.[12]

We used the FSFI questionnaire to measure female sexual function because it contains nineteen questions and allows us to do the following. We evaluated parameters such as sexual desire, arousal, vaginal wetness, orgasm, pleasure, and dyspareunia. Female sexual function scale is an inquiry form consisting of 19 questions and six sub-dimensions.[13] As the scores from this five-point Likert scale decrease, sexual dysfunction increases, and a total score below 26.55 is interpreted in favor of female sexual dysfunction.[14] Language validation of the female sexual function scale was performed by Aygın et al.[14]

Inclusion criteria: Only people aged 35-50, suffering from SUI and stress-predominant MUI, and undergoing TOT surgery were included in the study. All cases were sexually active and heterosexual.

Exclusion criteria: In the study, individuals with pelvic organ prolapse (POP), mixed type incontinence with predominantly urge incontinence, detrusor overactivity, a history of surgery for SUI or POP, pelvic radiotherapy for oncological reasons, and those who were sexually inactive were excluded. Additionally, individuals under 35 years of age or over 50 years of age, those who experienced complications during the surgical procedure, and those with uncontrolled chronic diseases were excluded. The study also excluded individuals who did not want to participate, those who filled out the survey insufficiently, and those who did not take part in the controls.

Statistical Analysis

The gathered data has been analyzed using SPSS version 24.0 for Windows, developed in Chicago, IL, USA.We used the Shapiro-Wilk test to determine the normality of the distribution. As a result, we presented the normally distributed data as mean±standard deviation. We statistically compared the mean values of the parameters before and after the surgery using the Sample t-test. We considered the P value <0.05 significant at the 95% confidence level. In order to analyze the average values of dependent variables in a single population, we used G-power 3.1 software. An effect size of 0.5, a margin of error of 0.05 (α), and a power of 95% (1-β) were considered. It was concluded that the study results would only be statistically significant if a sample size of at least 45 was taken.

RESULTS

The Demographic data of the study participants are shown in Table 1. The mean age of the participants we included in the study was 42.39±2.34 years. The rates of live or stillbirth of the patients were 3.12±1.23. 79.74% of the participants gave birth by normal vaginal delivery. Considering the menopausal status, there were 114 participants in the reproductive period, 39 in the premenopausal period, and 79 in the postmenopausal period, respectively. The mean body mass index of the participants was 26.23 kg/m². The smoking rate of the patients was 17.67%. Urinary incontinence rate during intercourse was 70.69%. When the urinary incontinence types were examined, 74.32% were stress urinary incontinence.

Table 1. Demographic data

	N=232
Age (year)	42.39±2.34
Parity	3.12±1.23
Type of delivery (%)	
Abdominal birth	47 (20.26%)
Vaginal birth	185 (79.74%)
Menopause status, n (%)	
Reproductive	114 (49.14%)
Premenopausal	39 (16.81%)
Postmenopausal	79 (34.05%)
BMI (kg/m²)	26.23 kg/m²
Smoking, n (%)	41 (17.67%)
Coital incontinence, n (%)	164 (70.69%)
Types of incontinence (%)	
Stress type	74.32%
Mix type	25.68%

It is seen in Table 2 that while IIQ-7 and UDI-6 values, which show the adverse effects of urinary incontinence on women, were 13.06±3.74 and 7.03±2.61 preoperatively, we found 2.14±2.12 and 2.92±1.77 postoperatively. There was a statistically significant difference between these groups (p=0.0001, p=0.0001).

Table 2. The IIQ-7 and UDI-6 scores of the patients before and after surgery

	Before TOT operation (n=232)	After TOT operation (n=232)	p-value
IIQ-7	13.06±3.74	2.14±2.12	0.0001*
UDI-6	7.03±2.61	2.92±1.77	0.0001*

*: statistically significant, Sample t-test

The FSFI scores as a female sexual function scale in the participants we included in our study are shown in Table 3. There is a statistically significant improvement in all parameters except the pain in the scale (p values: 0.0001, 0.0001, 0.0001, 0.0001, and 0.0001, respectively). The mean values of Desire, Arousal, Lubrication, Orgasm, and Satisfaction were preoperative 3.02±0.62, 3.23±0.60, 4.05±0.66, 4.06±0.68 and 4.13±0.72, postoperative 3.55±0.690, 4.79±1.05, 4.57±0.51, 4.43±0.72, and 5.12±0.68.

Table 3. The FSFI score of patients before and after surgery

Domain	Before TOT operation (n=232)	After TOT operation (n=232)	p-value
Desire	3.02±0.62	3.55±0.690	0.0001*
Arousal	3.23±0.60	4.79±1.05	0.0001*
Lubrication	4.05±0.66	4.57±0.51	0.0001*
Orgasm	4.06±0.68	4.43±0.72	0.0001*
Satisfaction	4.13±0.72	5.12±0.68	0.0001*
Pain	4.09±0.71	4.16±0.78	0.097
Total FSFI	22.58±1.91	26.62±1.80	0.0001*

*: statistically significant, Sample t-test

PISQ-12 survey results showing sexual status in pelvic organ prolapse and urinary incontinence are shown in Table 4. According to the results of this survey, there is a statistically significant improvement in all scores (p values, respectively: 0.0001, 0.0001, 0.0001). The mean values of the Behavioral/emotive domain, Physical domain, and Partner-related domain were 9.37±11.22, 13.85±4.81 and 16.55±3.40 preoperatively, 14.43±0.70, 14.77±0.75, and 17.41±0.50 postoperatively, respectively.

Table 4. The pelvic organ prolapse/urinary incontinence sexual questionnaire (PISQ-12)

Domain	Before TOT operation (n=232)	After TOT operation (n=232)	p-value
Behavioral/emotive domain	9.37±11.22	14.43±0.70	0.0001*
Physical domain	13.85±4.81	14.77±0.75	0.0001*
Partner-related domain	16.55±3.40	17.41±0.50	0.0001*
Total score	39.77±14.19	46.61±0.97	0.0001*

*: statistically significant, Sample t-test

DISCUSSION

In our study, we aimed to measure the sexual function of 232 urinary incontinence patients with questionnaires before and after the TOT operation and to compare these results. Since all of the cases included in our study started to have regular sexual life in the sixth month, we asked them to complete our control questionnaires in the sixth month postoperatively. In all survey results, we discovered a significant improvement in sexual function and sexual life. Based on the flow diagram, our study showed that only 4 out of 251 cases failed. However, we were unable to determine the success of the TOT operation on 12 cases due to a lack of follow-up information. Out of the remaining 239 cases, 4 cases (1.67%) failed. It is noteworthy that we excluded complicated cases from the study. Hence, we don't know if our results are consistent with the literature. Our study found the TOT operation to be effective in all cases, and this supports the literature due to its low failure rate.[16] Urinary incontinence can cause women severe anxiety and self-confidence problems.[17] In this context, when we evaluated the anxiety and self-confidence due to urinary incontinence in women in the sixth month of our study with UDI-6 and IIQ-7, we found a promising improvement compared to the pre-TOT operation. Conditions such as coital incontinence and related odor and wetness that occur during the sexual intercourse of women with their partners affect the sexual function of both the woman and her partner.[17,18] Women's posture due to urinary incontinence badly affects their social standing, body image, and self-confidence. Our study supports this situation with the postoperative improvement of the Behavioral/emotive domain and Physical domain values, especially in the PISQ-12 questionnaire.

Many women who suffer from urinary incontinence experience leakage, particularly during sexual intercourse. Coital incontinence may occur during penetration or orgasm and may prevent effective orgasm.[4] In addition, the feeling of discomfort due to coital incontinence will reduce sexual satisfaction by decreasing interest. In the study, we found a radical improvement in the values related to orgasm, pleasure, and satisfaction in the FSFI questionnaire. TOT operation positively affects effective orgasm, satisfaction, and increased pleasure. It has also been proven in the literature that TOT operation significantly reduces coital incontinence.[19] Recent studies show that patients with coital incontinence benefit more from TOT operations than those without coital incontinence.[20] TOT operation does not only treat urinary incontinence. It also treats coital incontinence and sexual dysfunction. In conclusion, our study found that sexual desire, sexual arousal, vaginal lubrication, orgasm, satisfaction, behavioral and mental state, physical state, and partner-related situations changed positively with the FSFI and PISQ-12 questionnaires. In line with the literature, TOT operation positively affects all these parameters and radically improves female sexual function.

During sexual intercourse, in addition to emotional and mental stimulation, women secrete a lubricating mucus-like fluid from the Bartholin gland with anatomical and physical stimulation.[21] The primary nerve responsible for innervation controlling this condition is the pudendal nerve, and it has been proven that it is impossible to damage the pudendal nerve anatomically in TOT operations.[22] While some studies mentioned that clitoral blood flow is adversely affected in transvaginal tape (TVT) application, resulting in decreased pleasure and sensation, this has been proven not to be the case in TOT operation.[23] However, contrary to this, some studies have reported that the clitoral region swells and temporary edema occurs in 15.8% of the patients who underwent TOT operation.[24] To remove such contradictory situations impartially, studies that include all sections of the prospective society with prominent participants are needed. In the study of Elzevier et al.[24] who examined TOT operations, they suggested that dyspareunia increased in TOT operations performed from the outside, mainly due to the narrowing of the vaginal inlet. Addressing this situation, Serati et al.[25] revealed that changes in clitoral blood flow, injury to the clitoral innervation, decreased genital sensation, vaginal stricture, and dyspareunia in TOT surgeries are all due to errors in surgical technique and application. Again, examining this issue, Weber et al.[26] in their study, showed that when operations such as TOT operation are not combined with other procedures, vaginal narrowing is minimal and does not cause dyspareunia. In this context, we did not encounter the abovementioned conditions in our study, and dyspareunia was no change in one of our scales.

The cases were evaluated for dyspareunia using questions 17, 18, and 19 of the FSFI questionnaire. The results are presented in the pain row of **Table 4**. Furthermore, the presence of dyspareunia was also assessed using question 5 of the physical space questions of the PISQ-12 survey. There was a significant statistical difference in the physical field parameters' total values before and after the surgery. However, while there were no significant differences in the results of the 5th question before and after the surgery, the postoperative period showed a more significant numerical result in the Physical domain. In studies in the literature investigating the relationship between female sexual dysfunction and TOT, almost one out of

four patients had de novo dyspareunia, and the FSFI score was abysmal.[27] However, in the study of Narin et al.[28] it was observed that while dyspareunia did not change, the FSFI score also improved. In another recent study, it was observed that there was no change in pain scores due to TOT operation and even an increase in arousal scores.[29] The TOT procedure was only carried out for research purposes, which could explain why dyspareunia tends to improve in roughly 50% of cases, particularly before undergoing the TOT procedure, as per existing literature. The same study revealed that 4% of cases developed new dyspareunia.[30] In a recent study, in 94 cases, the mesh was removed after TOT due to dyspareunia. After the mesh was removed, there was a significant improvement in dyspareunia rates.[31] However, more comprehensive studies are needed to confirm the association between mesh-supported surgeries and dyspareunia after the procedure, as there are contradictory findings. In our study, however, no change was observed in our scores regarding dyspareunia. Many conflicting factors affect the outcome of the TOT operation, resulting in contradictory situations. To resolve this, we need to conduct extensive multi-center studies to gain a better understanding. Our study highlights that correcting coital incontinence caused by urinary incontinence can significantly improve self-confidence. At the same time, with the TOT operation, sexual pleasure will increase, and anxiety will be minimized. With the decrease in anxiety, libido and the rate of pleasure and orgasm will increase. During sexual intercourse, vaginal lubrication triggers both the partner and the woman emotionally and physically while preventing dyspareunia. However, the postoperative findings of our study belong to the postoperative sixth month of the cases. Therefore, we could not comment on the long-term results of the cases included in our study. Prospective studies covering long periods are required to illuminate all these dark spots.

CONCLUSION

The sexual lives of women suffering from urinary incontinence deteriorate both mentally and physically. Elimination of urinary incontinence with TOT operation significantly improves sexual dysfunctions in women. Our study showed dramatic improvements in the FSFI and PISQ-12 scores, which we use to reveal sexual dysfunction. Accordingly, it is crucial to evaluate sexual function in all women suffering from urinary incontinence, and these questionnaires should be used routinely in urogynecology outpatient clinics. Treating sexual dysfunction due to urinary incontinence is only possible by treating urinary incontinence.

ETHICAL DECLARATIONS

Ethics Committee Approval: The study was carried out with the permission of İstanbul Kanuni Sultan Süleyman Training and Research Hospital Clinical Researches Ethics Committee (Date: 26.05.2022, Decision No: KAEK/2022.05.117).

Informed Consent: Since the study was designed prospectively, written informed consent was obtained from the patients. A copy with a wet signature was given to the participants and a copy is kept in my archive.

Referee Evaluation Process: Externally peer-reviewed.

Conflict of Interest Statement: The authors have no conflicts of interest to declare.

Financial Disclosure: The authors declared that this study has received no financial support.

Author Contributions: All of the authors declare that they have all participated in the design, execution, and analysis of the paper, and that they have approved the final version.

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